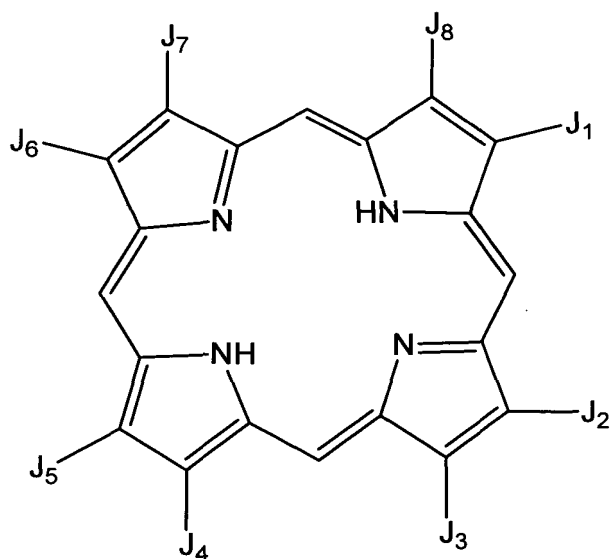
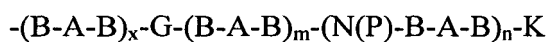


## CLAIMS

1. A composition comprising a compound according to the formula



- 5            wherein at least one of J<sub>1</sub>, J<sub>2</sub>, J<sub>3</sub>, J<sub>4</sub>, J<sub>5</sub>, J<sub>6</sub>, J<sub>7</sub> and J<sub>8</sub> is independently selected from the group consisting of



- 10           wherein each A is independently selected from the group consisting of: a nonentity, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>2</sub>-C<sub>12</sub> alkenyl, C<sub>2</sub>-C<sub>12</sub> alkynyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>3</sub>-C<sub>12</sub> cycloalkenyl, C<sub>3</sub>-C<sub>12</sub> cycloalkynyl, C<sub>1</sub>-C<sub>12</sub> alkanol, C<sub>3</sub>-C<sub>12</sub> cycloalkanol, and C<sub>3</sub>-C<sub>8</sub> hydroxyaryl;

- each B is independently selected from the group consisting of: a  
15           nonentity, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>2</sub>-C<sub>12</sub> alkenyl, C<sub>2</sub>-C<sub>12</sub> alkynyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>3</sub>-C<sub>12</sub> cycloalkenyl, C<sub>3</sub>-C<sub>12</sub> cycloalkynyl, C<sub>1</sub>-C<sub>12</sub> alkanol, C<sub>3</sub>-C<sub>12</sub> cycloalkanol, and C<sub>3</sub>-C<sub>8</sub> hydroxyaryl;

              and with the proviso that each -B-A-B- unit contain at least one carbon atom;

wherein G is independently selected from the group consisting of  $-N(P)-$ ,  $-(C=O)-N(P)-$ ,  $-N(P)-(C=O)-$ , and a nonentity;

x is independently 0 or 1;

m is independently 0 or 1;

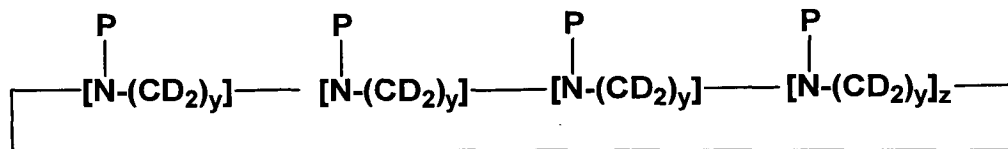
5 n is independently an integer from 0 to 20;

each P is independently selected from the group consisting of H and  $C_1$ - $C_{12}$  alkyl;

each K is independently selected from the group consisting of H,  $C_1$ - $C_{12}$  alkyl,  $C_2$ - $C_{12}$  alkenyl,  $C_2$ - $C_{12}$  alkynyl,  $C_3$ - $C_{12}$  cycloalkyl,  $C_3$ - $C_8$  cycloaryl,  $C_3$ - $C_{12}$  cycloalkenyl,  $C_3$ - $C_{12}$  cycloalkynyl,  $C_1$ - $C_{12}$  alkanol,  $C_3$ - $C_{12}$  cycloalkanol, and  $C_3$ - $C_8$  hydroxyaryl, and Q;

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where each Q is independently selected from the group consisting of



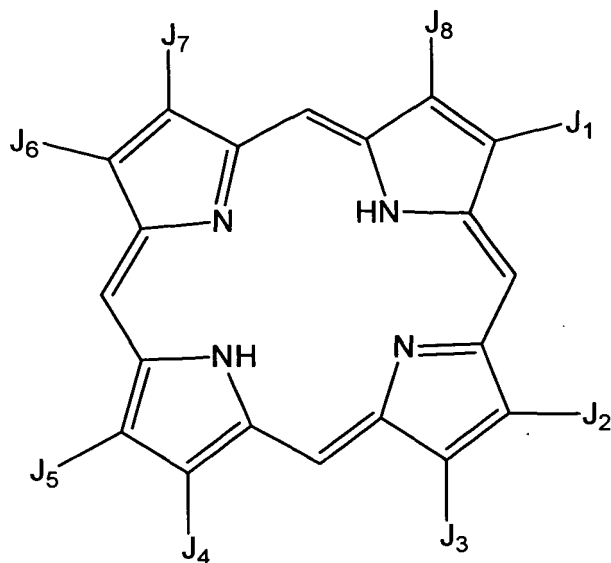
15 where each P is independently selected from the group consisting of H and  $C_1$ - $C_{12}$  alkyl, each D is selected from the group consisting of H and  $C_1$ - $C_{32}$  alkyl, y is an integer from 1 to 8, and z is an integer from 0 to 5, and where the Q moiety is attached to the remainder of the molecule at any C or N atom in the Q moiety (including C atoms in the D or P moieties) by removing a hydrogen atom, a P

20 substituent, or a D substituent of the Q moiety to form an open valence for attachment to the remainder of the molecule;

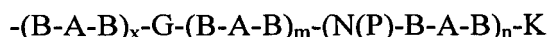
and where the remaining members or member of  $J_1, J_2, J_3, J_4, J_5, J_6, J_7$  and  $J_8$  are each independently selected from the group consisting of H,  $-B-A-B$ ,  $-COOH$ ,  $-SO_3H$ ,  $-B-A-B-COOH$ , or  $-B-A-B-SO_3H$ , where each A and each B are

25 independently selected as defined above and with the proviso that each  $-B-A-B$ -unit has at least one carbon atom.

2. A composition comprising a compound according to the formula



wherein at least one of J<sub>1</sub>, J<sub>2</sub>, J<sub>3</sub>, J<sub>4</sub>, J<sub>5</sub>, J<sub>6</sub>, J<sub>7</sub> and J<sub>8</sub> is independently M,  
5 where each M is independently selected from the group consisting of



wherein each A is independently selected from the group consisting of: a  
10 nonentity, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>2</sub>-C<sub>12</sub> alkenyl, C<sub>2</sub>-C<sub>12</sub> alkynyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub>  
cycloaryl, C<sub>3</sub>-C<sub>12</sub> cycloalkenyl, C<sub>3</sub>-C<sub>12</sub> cycloalkynyl, C<sub>1</sub>-C<sub>12</sub> alkanol, C<sub>3</sub>-C<sub>12</sub>  
cycloalkanol, and C<sub>3</sub>-C<sub>8</sub> hydroxyaryl;

each B is independently selected from the group consisting of: a  
nonentity, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>2</sub>-C<sub>12</sub> alkenyl, C<sub>2</sub>-C<sub>12</sub> alkynyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub>  
15 cycloaryl, C<sub>3</sub>-C<sub>12</sub> cycloalkenyl, C<sub>3</sub>-C<sub>12</sub> cycloalkynyl, C<sub>1</sub>-C<sub>12</sub> alkanol, C<sub>3</sub>-C<sub>12</sub>  
cycloalkanol, and C<sub>3</sub>-C<sub>8</sub> hydroxyaryl;

and with the proviso that each -B-A-B- unit contain at least one carbon  
atom;

wherein G is independently selected from the group consisting of -N(P)-,  
20 -(C=O)-N(P)-, -N(P)-(C=O)-, and a nonentity;

x is independently 0 or 1;

m is independently 0 or 1;

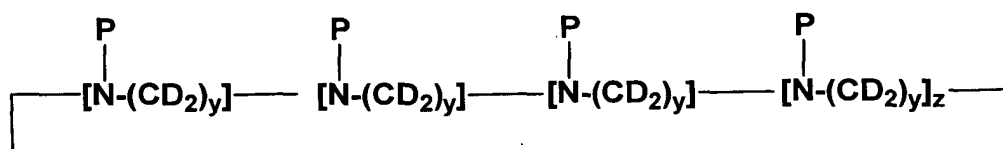
n is independently an integer from 0 to 20;

each P is independently selected from the group consisting of H and

5 C<sub>1</sub>-C<sub>12</sub> alkyl;

each K is independently selected from the group consisting of H, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>2</sub>-C<sub>12</sub> alkenyl, C<sub>2</sub>-C<sub>12</sub> alkynyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>3</sub>-C<sub>12</sub> cycloalkenyl, C<sub>3</sub>-C<sub>12</sub> cycloalkynyl, C<sub>1</sub>-C<sub>12</sub> alkanol, C<sub>3</sub>-C<sub>12</sub> cycloalkanol, and C<sub>3</sub>-C<sub>8</sub> hydroxyaryl, and Q;

10 where each Q is independently selected from the group consisting of



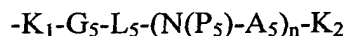
where each P is independently selected from the group consisting of H and

C<sub>1</sub>-C<sub>12</sub> alkyl, each D is selected from the group consisting of H and C<sub>1</sub>-C<sub>32</sub> alkyl,

15 y is an integer from 1 to 8, and z is an integer from 0 to 5, and where the Q moiety is attached to the remainder of the molecule at any C or N atom in the Q moiety (including C atoms in the D or P moieties) by removing a hydrogen atom, a P substituent, or a D substituent of the Q moiety to form an open valence for attachment to the remainder of the molecule;

20 and where the remaining members or member of J<sub>1</sub>, J<sub>2</sub>, J<sub>3</sub>, J<sub>4</sub>, J<sub>5</sub>, J<sub>6</sub>, J<sub>7</sub> and J<sub>8</sub> are each independently selected from the group consisting of H, -B-A-B, -COOH, -SO<sub>3</sub>H, -B-A-B-COOH, or -B-A-B-SO<sub>3</sub>H, where each A and each B are independently selected as defined above and with the proviso that each -B-A-B- unit has at least one carbon atom;

25 with the proviso that M excludes moieties of the form

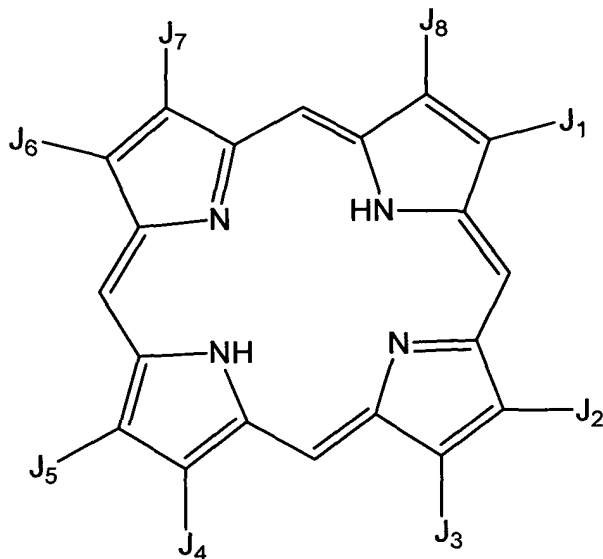


where K<sub>1</sub> is independently selected from the group consisting of C<sub>1</sub>-C<sub>8</sub> alkyl and

where the valence to the left of K<sub>1</sub> attaches to the porphyrin ring;

- G<sub>5</sub> is -O-, -(C=O)-, -C(=O)-O-, -O-(C=O)-, -O-(C=O)-O-, -O-(C=O)-N-,  
-N-(C=O)-O-, or a nonentity;
- L<sub>5</sub> is C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>1</sub>-C<sub>8</sub> alkoxy, C<sub>1</sub>-C<sub>8</sub>  
alkyl-C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> alkyl-C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>1</sub>-C<sub>8</sub> alkoxy-C<sub>3</sub>-C<sub>8</sub>  
5 cycloaryl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl-C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl-C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>3</sub>-C<sub>8</sub>  
cycloaryl-C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>3</sub>-C<sub>8</sub> cycloaryl-C<sub>1</sub>-C<sub>8</sub> alkoxy, C<sub>3</sub>-C<sub>8</sub> cycloaryl-C<sub>3</sub>-C<sub>8</sub>  
cycloalkyl, or a nonentity;
- each A<sub>5</sub> is independently selected from the group consisting of C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub>  
alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>3</sub>-C<sub>8</sub> cycloalkenyl,  
10 and C<sub>3</sub>-C<sub>8</sub> cycloalkynyl;
- P<sub>5</sub> is selected from the group consisting of H and C<sub>1</sub>-C<sub>8</sub> alkyl;
- n is an integer from 2 to 8;
- and K<sub>2</sub> is independently selected from the group consisting of H, C<sub>1</sub>-C<sub>8</sub> alkyl,  
C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>3</sub>-C<sub>8</sub> cycloaryl, C<sub>3</sub>-C<sub>8</sub>  
15 cycloalkenyl, C<sub>3</sub>-C<sub>8</sub> cycloalkynyl, C<sub>1</sub>-C<sub>8</sub> alkanol, C<sub>3</sub>-C<sub>8</sub> cycloalkanol, and C<sub>3</sub>-C<sub>8</sub>  
hydroxyaryl.
3. The composition of claim 2, where G is independently selected from  
-(C=O)-N(P)- and -N(P)-(C=O)-.
- 20
4. The composition of claim 2, where the Q moiety is attached to the remainder  
of the molecule at any N atom in the Q moiety by removing a P substituent of the  
Q moiety to form an open valence for attachment to the remainder of the  
molecule.
- 25
5. The composition of claim 2, wherein each A and B substituent, if present, is  
selected from C<sub>1</sub>-C<sub>12</sub> alkyl.
6. The composition of claim 2, wherein at least one A substituent comprises a  
30 cyclopropane group.

7. The composition of claim 2 comprising a compound of the formula



where  $J_1$  and  $J_2$  are independently M and each M is independently selected from  
5 the group consisting of  $-(B-A-B)_x-G-(B-A-B)_m-(N(P)-B-A-B)_n-K$ ;  
 $J_3$ ,  $J_4$ ,  $J_6$  and  $J_8$  are independently selected from methyl and ethyl; and  
 $J_5$  and  $J_7$  are independently selected from methyl, ethyl, and  $-SO_3H$ .

8. The composition of claim 7, where  $J_1$  and  $J_2$  are independently M and each M  
10 is independently selected from the group consisting of  
 $-(B-A-B)-G-(B-A-B)-(N(P)-B-A-B)_n-K$ .

9. The composition of claim 8, wherein at least one B-A-B unit comprises a  
cycloalkyl moiety.

15

10. The composition of claim 9, wherein at least one B-A-B unit comprises a  
cyclopropyl moiety.

11. The composition of claim 7, where  $J_1$  and  $J_2$  are independently M and each M  
20 is independently selected from the group consisting of

-C<sub>1</sub>-C<sub>12</sub> alkyl-G-C<sub>1</sub>-C<sub>12</sub> alkyl-(N(P)-B-A-B)<sub>n</sub>-K.

12. The composition of claim 7, where J<sub>1</sub> and J<sub>2</sub> are independently M and each M is independently selected from the group consisting of

5 -C<sub>1</sub>-C<sub>12</sub> alkyl-(C=O)-N(P)-C<sub>1</sub>-C<sub>12</sub> alkyl-(N(P)-B-A-B)<sub>n</sub>-K.

13. The composition of claim 7, where J<sub>1</sub> and J<sub>2</sub> are independently M and each M is independently selected from the group consisting of

10 -(CH<sub>2</sub>)<sub>2</sub>C(=O)N(P<sub>2</sub>)-C<sub>1</sub>-C<sub>4</sub> alkyl-[NH(CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>)]<sub>f</sub>C<sub>1</sub>-C<sub>12</sub> alkyl, where P<sub>2</sub> is H, methyl, or ethyl, and f is an integer from 1 to 10.

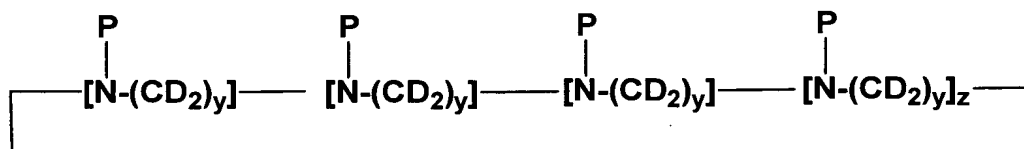
14. The composition of claim 10, where J<sub>1</sub> and J<sub>2</sub> are identical.

15. The composition of claim 11, where J<sub>1</sub> and J<sub>2</sub> are identical.

15

16. The composition of claim 1, wherein each -K is independently Q;

where each Q is independently selected from the group consisting of



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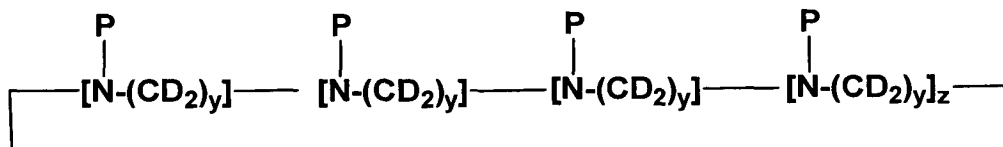
wherein only one D moiety is selected from the group consisting of C<sub>1</sub>-C<sub>32</sub> alkyl and all remaining D moieties are H; wherein three P groups are selected from the group consisting of -H and -CH<sub>3</sub>; wherein the fourth P group is absent and the Q moiety is attached to the remainder of the molecule at that valence; and wherein y is 2, 3, or 4 and z is 0, 1, or 2.

25

17. The composition of claim 2, wherein each -K is independently

Q;

where each Q is independently selected from the group consisting of



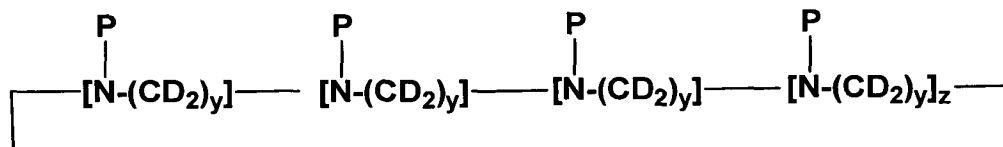
5 ;

wherein only one D moiety is selected from the group consisting of C<sub>1</sub>-C<sub>32</sub> alkyl and all remaining D moieties are H; wherein three P groups are selected from the group consisting of -H and -CH<sub>3</sub>; wherein the fourth P group is absent and the Q moiety is attached to the remainder of the molecule at that valence; and wherein y  
10 is 2, 3, or 4 and z is 0, 1, or 2.

18. The composition of claim 6, wherein each -K is independently

Q;

where each Q is independently selected from the group consisting of

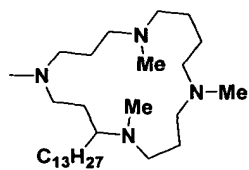


15 ;

wherein only one D moiety is selected from the group consisting of C<sub>1</sub>-C<sub>32</sub> alkyl and all remaining D moieties are H; wherein three P groups are selected from the group consisting of -H and -CH<sub>3</sub>; wherein the fourth P group is absent and the Q  
20 moiety is attached to the remainder of the molecule at that valence; and wherein y is 2, 3, or 4 and z is 0, 1, or 2.



19. The composition of claim 1, wherein -K is



5 20. The composition of claim 2, wherein -K is

